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AMIN. TUROCY & CALVIN, LLP
24TH FLOOR, NATIONAL CITY CENTER
1900 EAST NINTH STREET
CLEVELAND, OH 44114

EXAMINER

COLAN, GIOVANNA B

ART UNIT	PAPER NUMBER
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2162

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/758,370

Applicant(s)

BARGERON ET AL.

Examiner

Giovanna Colan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/20/06, 10/31/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is issued in response to the Amendment filed on 12/28/2006.
2. Claims 1 – 2, 4, 6 – 9, 11 – 15, 18, 21 – 25, 27– 28, 33, 37 – 40, and 42 were amended. No claims were canceled. No claims were added.
3. This action is made Final.
4. Claims 1 –42 are pending in this application.
5. The information disclosure statement (IDS) submitted on 11/20/2006, and 10/31/2006. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.
6. Applicant's arguments with respect to the amended claims 1, and 33 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1 – 4, 7 – 9, 11 – 12, 19 – 22, 24 – 26, 33 – 36, and 38 – 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhao (US Patent No. 6,487,301 B1, issued: November 26, 2004) in view of Bresler et al. (Bresler hereinafter) (US Patent App. Pub. No. 2003/0152293 A1, filed: January 24, 2003).

Regarding Claim 1, Zhao discloses a system for document retrieval and/or indexing comprising:

a component that receives a captured image of at least a portion of a physical document (Col. 4, and 7, lines 20 – 22 and 33 – 36, and 25 – 35; respectively, “receives the digital representation”, Zhao¹); and

a search component that locates a match to the document (Col. 4, lines 44 – 47, “the first digital document is searched..”, Zhao), the search is performed over word-level topological properties of generated images (Col. 4, lines 45 – 47, “search to find the confusing alphanumeric characters and a character string ...”, Zhao), the generated

¹ Wherein the prior art Zhao further discloses the physical document specifically in Col. 4 and 7, lines 33 – 38 and 25 – 35; respectively.

images being images of at least a portion of one or more electronic documents (Col. 4, lines 6 – 10, Zhao).

Zhao also discloses width of words (Col. 4, lines 49 – 52, Zhao²). However, Zhao is silent with respect to that such word-level topological properties comprise at least respective widths of words on the physical document. On the other hand, Bresler discloses a system and method similar to the one of Zhao including word-level topological properties comprise at least respective widths of words on the physical document (Page 10, [0189], lines 1 – 6, Bresler). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Bresler's teachings to the system Zhao. Skilled artisan would have been motivated to do so, as suggested by Bresler (Page 3, [0040, Bresler), to identify a page within a publication and locate, within that page, the text or graphics at which the user is pointing. In addition, both of the references (Zhao and Bresler) teach features that are directed to analogous art and they are directed to the same field of endeavor, such as, databases management systems, generating images, matching, and signatures. This close relation between both of the references highly suggests an expectation of success.

Regarding Claim 2, the combination of Zhao in view of Bresler discloses a system, further comprising a component that generates signature(s) corresponding to one or more of the generated images and generates a signature corresponding to the captured image of the physical document (Col. 4 and 5, lines 33 – 36 and 51 – 58;

² Wherein the overlap representation implies the width of the words as claimed.

respectively, "can make the digital signature by encrypting the digest ...", Zhao), the signatures identify the word-layout of the generated images (Col. 5 and 6, lines 57 – 58 and 53 – 59; respectively, Zhao), and the search performed via comparing the signatures of the generated images with the signature of the captured image of the physical document (Col. 4 and 5, lines 33 – 36 and 59 – 65; respectively, Zhao).

Regarding Claim 3, the combination of Zhao in view of Bresler discloses a system, the signatures being at least one of hash tables and approximate hash tables (Col. 9, lines 13 – 18, Zhao).

Regarding Claim 4, the combination of Zhao in view of Bresler discloses a system, the at least one of the hash tables and approximate hash tables comprising a key (Col. 4, lines 23 – 27, "a key", Zhao) that is associated with a location and width of a word within at least one of the generated images or the captured image of the physical document (Col. 4, lines 28 – 36 and 47 – 52, Zhao³).

Regarding Claim 7, the combination of Zhao in view of Bresler discloses a system, the signature(s) corresponding to the one or more generated images comprise a tolerance for error (Col. 13 – 14, lines 66 – 67 and 1 – 6, Zhao).

³ Wherein the order of the characters corresponds to the location claimed; and wherein the overlap representation corresponds to the width of the words claimed.

Regarding Claim 8, the combination of Zhao in view of Bresler discloses a system, a portion of the signature(s) associated with the one or more generated images is compared to a corresponding portion of the signature of the captured image of the physical document (Col. 4 and 5, lines 33 – 36 and 59 – 65; respectively, Zhao).

Regarding Claim 9, the combination of Zhao in view of Bresler discloses a system, the signature(s) corresponding to the one or more generated images that have a threshold number of matches to the corresponding portion of the signature of the captured image of the physical document are retained for further consideration (Col. 4 and 9, lines 33 – 36 and 56 – 62; respectively, Zhao).

Regarding Claim 11, the combination of Zhao in view of Bresler discloses a system, the signatures corresponding to the one or more generated images and the signature of the captured image of the physical document are generated at least in part upon a location of at least a portion of each word in the generated images and the captured image of the physical document, respectively (Col. 4, lines 33 – 36 and 47 – 49, Zhao⁴).

Regarding Claim 12, the combination of Zhao in view of Bresler discloses a system, the signatures corresponding to the one or more generated images and the signature of the captured image of the physical document further generated at least in

⁴ Wherein the order of the characters corresponds to the location claimed.

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part upon a width of each word in the captured image and the generated images, respectively (Col. 4, lines 33 – 36 and 49 – 52, Zhao⁵).

Regarding Claim 19, the combination of Zhao in view of Bresler discloses a system, further comprising a caching component that automatically generates an image of an electronic document at a time such electronic document is printed (Col. 4, lines 5 – 7, Zhao).

Regarding Claim 20, the combination of Zhao in view of Bresler discloses a system, further comprising an artificial intelligence component that infers which printed documents should have associated stored images (Col. 4, lines 5 – 10, Zhao⁶).

Regarding Claim 21, the combination of Zhao in view of Bresler discloses a system, further comprising an artificial intelligence component that excludes a subset of the generated images from the search based at least in part upon one of user state, user context, or user history (Col. 17, lines 17 – 23, Zhao⁷).

Regarding Claim 22, the combination of Zhao in view of Bresler discloses a system, at least one of the generated images is associated with an entry within a data store, the entry comprising one or more of an image of a page of an electronic

⁵ Wherein the overlap representation implies the width of the words as claimed.

⁶ Wherein the step of producing from a specific region corresponds to the step of inferring which printed documents ... as claimed.

document or a signature that identifies the image of the page (Col. 4, lines 23 – 27, “a key”, Zhao), the signature based at least in part upon topological properties of words within the image of the page (Col. 4, lines 28 – 31 and 47 – 52, Zhao).

Regarding Claim 24, the combination of Zhao in view of Bresler discloses a method that facilitates indexing and/or retrieval of a document, comprising:

generating a plurality of images of electronic documents, at least one of the images of electronic documents corresponding to a printed document (Col. 4, lines 5 – 7, Zhao⁸);

capturing an image of a printed document after such document has been printed (Col. 4, lines 20 – 22, “receives the digital representation”, Zhao);

receiving a query requesting retrieval of an electronic document corresponding to the image of the printed document (Col. 4, lines 30 – 33, Zhao);

generating one or more signatures corresponding to at least a portion of one or more of the generated images, the signatures generated at least in part upon word-layout within the image(s) (Col. 5, lines 51 – 58, “can make the digital signature by encrypting the digest ...”, Zhao);

generating a signature corresponding to at least a portion of the captured image, the signature is generated based at least in part upon word-layout within the captured image (Col. 5 and 11, lines 51 – 62 and 44 – 51; respectively, “... use a scanner to

⁷ Wherein the step including when a document could not verify himself and routing it to the proper server corresponds to the step of excluding a subset of the generated images as claimed.

⁸ Wherein the prior art Zhao further discloses the printed document specifically in Col. 4 and 7, lines 33 – 38 and 25 – 35; respectively.

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detect the digital signature (i.e. card number or other ID) from the card, and compare the signature with the authentication stored inside the card ..."; Zhao); and

comparing the one or more signatures corresponding to the one or more generated images to the signature corresponding to the captured image (Col. 5, lines 59 – 65, Zhao).

Regarding Claim 25, the combination of Zhao in view of Bresler discloses a method that facilitates indexing and/or retrieval of a document, comprising:

receiving a captured image of at least a portion of a document (Col. 4, lines 20 – 22, "receives the digital representation", Zhao); and
searching at least one data store for an electronic document corresponding to the captured image (Col. 4 and 19, lines 44 – 47 and 13 – 17, "the first digital document is searched.."; respectively, Zhao), the search performed via comparing topological word properties within the captured image with topological word properties of generated images corresponding to a plurality of electronic documents (Col. 4, lines 28 – 38, "compare the read first authentication information with second authentication information", Zhao⁹), the respective topological word properties comprising at least width of each word (Col. 4, lines 49 – 52, Zhao¹⁰; and Page 10, [0189], lines 1 – 6, Bresler).

⁹ Wherein the security pattern that is physical part of the analog form corresponds to the topological word properties claimed.

¹⁰ Wherein the overlap representation implies the width of the words as claimed.

Regarding Claim 26, the combination of Zhao in view of Bresler discloses a method, further comprising:

generating signatures corresponding to the generated images, the signatures based at least in part upon location and width of each word within the generated images (Col. 5, lines 51 – 58, “can make the digital signature by encrypting the digest ...”, Zhao);

generating a signature corresponding to the captured image of the document, the signature based at least in part upon location and width of each word within the captured image (Col. 5, lines 51 – 58, Zhao); and

comparing the signatures corresponding to the generated images with the signature corresponding to the captured image of the document (Col. 5, lines 59 – 65, Zhao).

Regarding Claim 33, the combination of Zhao in view of Bresler discloses a system for indexing and/or retrieval of a document, comprising:

means for generating an image of an electronic document when the electronic document is printed (Col. 4, lines 5 – 7, Zhao¹¹);

means for capturing an image of the document after the document has been printed (Col. 4, lines 5 – 7, Zhao);

means for storing the electronic document (Col. 19, lines 5 – 11, Zhao); and

means for retrieving the electronic document (Col. 4, lines 30 – 33, Zhao), the means based at least in part upon comparing location of respective words and width of

respective words within the captured image to the location of respective words and width of respective words within the generated image (Col. 4, lines 28 – 31 and 47 – 52, wherein the order of the characters corresponds to the location claimed and wherein the overlap representation implies the width of the words as claimed, Zhao; and Page 9, [0167], [0168], and [0171], lines 5 – 7, 5 – 10, and 1 – 9; respectively; “because of the variable spaces and widths of printed characters, the pattern representing each page generates a unique array..”; and “Because of the irregular spacing between different characters and the different lengths and positions of words...”; wherein the step of matching imaged and processed patterns against a library of publication’s pre-stored patterns corresponds to the step of comparing location of respective words and width of respective words as claimed; Bresler).

Regarding Claim 34, the combination of Zhao in view of Bresler discloses a system, further comprising:

means for generating a signature that includes features that are highly specific to the generated image (Col. 5, and 10 – 11, lines 51 – 58, and 64 – 67 and 1 – 5; respectively, Zhao); and

means for generating a signature corresponding to the captured image, the signature includes features that are highly specific to the captured image (Col. 5, and 10 – 11, lines 51 – 58, and 64 – 67 and 1 – 5; respectively, Zhao).

¹¹ Wherein the prior art Zhao further discloses the printed document specifically in Col. 4 and 7, lines 33 –

Regarding Claim 35, the combination of Zhao in view of Bresler discloses a system, further comprising means for comparing the signature corresponding to the generated image with the signature corresponding to the captured image (Col. 5, lines 59 – 65, Zhao).

Regarding Claim 36, the combination of Zhao in view of Bresler discloses a system, further comprising means for accounting for error that occurs when capturing the image of the printed document (Col. 13 – 14, lines 66 – 67 and 1 – 6, Zhao).

Regarding Claim 38, the combination of Zhao in view of Bresler discloses a system that facilitates indexing and/or retrieval of a document, comprising:

a query component that receives an image of a printed document (Col. 4 and 17, lines 20 – 22 and 49 – 50, query interface; respectively, Zhao¹²);

a caching component that generates and stores an image corresponding to the image of the printed document prior to the query component receiving the image of the printed document (Col. 4 and 17, lines 5 – 7 and 49 – 50, database 729; respectively, Zhao); and

a comparison component that retrieves the stored image via comparing location of words and width of words within the stored image to location of words and width of

38 and 25 – 35; respectively.

¹² Wherein the prior art Zhao further discloses the printed document specifically in Col. 4 and 7, lines 33 – 38 and 25 – 35; respectively.

words within the image of the printed document (Col. 4 and 17, lines 28 – 31 and 47 – 52, and 52 – 55, comparator 517; respectively, Zhao¹³).

Regarding Claim 39, the combination of Zhao in view of Bresler discloses a computer readable medium having computer executable instructions stored thereon to return stored image of an electronic document to a user based at least in part upon topological word properties of at least one of captured image corresponding to the electronic document (Col. 4 and 17, lines 28 – 31 and 47 – 52, and 55 – 57, network server 719, Zhao), the topological word properties comprise at least width of respective words (Col. 4, lines 49 – 52, Zhao¹⁴; and Page 10, [0189], lines 1 – 6, Bresler).

Regarding Claim 40, the combination of Zhao in view of Bresler discloses a computer readable medium having a data structure thereon, the data structure comprising:

a component that receives image(s) of at least a portion of a printed document (Col. 4, lines 20 – 22, “receives the digital representation”, Zhao¹⁵); and

a search component that facilitates retrieval of an electronic document (Col. 4, lines 44 – 47, “the first digital document is searched..”, Zhao), the electronic document corresponding to the image(s) associated with the printed document, the retrieval based at least in part upon corresponding word-level topological properties when comparing

¹³ Wherein the order of the characters corresponds to the location claimed; and wherein the overlap representation corresponds to the width of the words claimed.

¹⁴ Wherein the overlap representation implies the width of the words as claimed.

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the image(s) associated with the printed document and generated image(s) of the electronic document (Col. 4, lines 28 – 31 and 47 – 52, Zhao), the word-level topological properties comprise at least width of words (Col. 4, lines 49 – 52, Zhao¹⁶; and Page 10, [0189], lines 1 – 6, Bresler).

Regarding Claim 41, Zhao discloses all the limitations as disclosed above. However, Zhao is silent with respect to personal digital assistant. On the other hand, Bresler discloses a personal digital assistant (Fig. 8, Page 8, [0149], lines 5 – 7, Bresler). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Bresler's teachings to the system Zhao. Skilled artisan would have been motivated to do so, as suggested by Bresler (Page 7, [0146], lines 1 – 6, Bresler), to provide an imager-enabler device, either stand-alone or connected via a wireless network. In addition, both of the references (Zhao and Bresler) teach features that are directed to analogous art and they are directed to the same field of endeavor, such as, databases management systems, and image processing. This close relation between both of the references highly suggests an expectation of success.

Regarding Claim 42, the combination of Zhao in view of Bresler discloses a signal having one or more data packets that facilitate indexing and/or retrieval of a document, comprising:

¹⁵ Wherein the prior art Zhao further discloses the printed document specifically in Col. 4 and 7, lines 33 –

a request for retrieval of a stored image of at least a portion of an electronic document (Col. 4, lines 31 – 33, Zhao);

a signature of an electronic image of a printed document corresponding to a signature of the requested stored image associated with of the electronic document, the signatures based at least in part upon word layout of the images (Col. 5, lines 51 – 56, “the digital signature for the digital representation”, Zhao); and

a component that facilitates comparison of the signature of the electronic image of the printed document with the signature of the requested stored image associated with the electronic document (Col. 4, lines 28 – 31 and 47 – 52, Zhao).

9. Claims 5 – 6, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhao (US Patent No. 6,487,301 B1, issued: November 26, 2004), in view of Bresler et al. (Bresler hereinafter) (US Patent App. Pub. No. 2003/0152293 A1, filed: January 24, 2003), and further in view of Ming Ye et al. (Ye hereinafter) (Non-Patent Literature: “Document Image Matching and Annotation Lifting”, 2001 IEEE).

Regarding Claim 5, the combination of Zhao in view of Bresler discloses all the limitations as disclosed above including generated images all the limitations as disclosed above including generated images. However, the combination of Zhao in view of Bresler is silent with respect to confidence score. On the other hand, Ye discloses a scoring component that assigns confidence scores corresponding to a subset of the

38 and 25 – 35; respectively.

¹⁶ Wherein the overlap representation implies the width of the words as claimed.

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generated images that are searched against (Page 2, Section 2., Matching Score, “the matching score ...”, Ye). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Ye’s teachings to the system the combination of Zhao in view of Bresler. Skilled artisan would have been motivated to do so, as suggested by Ye (Page 2, Section 2., Matching Score, Ye), to minimize the interference of possible annotations. In addition, the applied references (Zhao, Bresler, and Ye) teach features that are directed to analogous art and they are directed to the same field of endeavor, such as, databases management systems, and image generation of documents. This close relation between the applied references highly suggests an expectation of success.

Regarding Claim 6, the combination of Zhao in view of Bresler and further in view of Ye discloses a system, a generated image with the highest confidence score is selected as the match to the captured image of the document (Page 4, Section 4, “Line Tracing Protocol”, proximity measure ... with the highest score”, Ye).

Regarding Claim 10, the combination of Zhao in view of Bresler and further in view of Ye discloses a system, further comprising a component that assigns confidence scores when a threshold number of signatures are being retained for further consideration (Page 2, Section 2., Matching Score, “the matching score ...”, Ye).

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10. Claims 13, 23, 27, 29, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhao (US Patent No. 6,487,301 B1, issued: November 26, 2004), in view of Bresler et al. (Bresler hereinafter) (US Patent App. Pub. No. 2003/0152293 A1, filed: January 24, 2003), and further in view of Shin-Ywan Wang et al. (Wang hereinafter) (Non-Patent Literature: "Block Selection: A Method for Segmenting Page Image of Various Editing Styles", Canon Information Systems, 1995 IEEE).

Regarding Claim 13, the combination of Zhao in view of Bresler discloses all the limitations as disclosed above including generated images and captured image of the physical documents. However, the combination of Zhao in view of Bresler is silent with respect to trees. On the other hand, Wang discloses: a component that generates at least one tree representation related to the generated images and the captured image of the physical document, the at least one tree representation being a hierarchical representation of the generated images and the captured image of the physical document, wherein the at least one tree representation conveys which segments of the generated images and which segments of the captured image of the physical document include a word (Page 128, "which segments the page image and converts it into another computer readable format – a hierarchical tree description form which the page content arrangement can be realized. Each node on the tree maps to an object on the page ...", Wang). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Wang's teachings to the system of the combination of Zhao in view of Bresler. Skilled artisan would have been motivated to do

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so, as suggested by Wang (Page 1 and 133, "Abstract" and "Conclusion", Wang), to provide categorized page blocks for easy selection, to generate a robust result but also, and to expand to broader document image processing applications. In addition, the applied references (Zhao, Bresler, and Wang) teach features that are directed to analogous art and they are directed to the same field of endeavor, such as, databases management systems, image generation of documents, and searching. This close relation between the applied references highly suggests an expectation of success.

Furthermore, the combination of Zhao in view of Bresler and further in view of Wang discloses: a comparison component that compares a tree representation related to the generated images with the tree representation related to the captured image of the physical document (Col. 4, lines 28 – 38, "compare the read first authentication information with second authentication information", Zhao; and Page 128, Abstract, Wang).

Regarding Claim 23, the combination of Zhao in view of Bresler and further in view of Wang discloses a system, the one or more of the image of the page of the electronic document or the signature that identifies the image of the page associated with one or more of a URL that identifies a location of the electronic document (Col. 17, lines 17 – 19, Zhao), the electronic document (Col. 4, lines 47 – 49, "first digital document", Zhao), a hierarchical tree representation of the image of the page of the electronic document (Page 128, Abstract, Wang), OCR of the image of the page (Col. 4, lines 39 – 44, Zhao), data relating to a number of times the image of the page has been

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accessed, customer records (Col. 15, lines 43 – 46, Zhao), payment information (Col. 15, lines 12 – 14, Zhao), and workflow information (Col. 18, lines 53 – 58, Zhao).

Regarding Claim 27, the combination of Zhao in view of Bresler and further in view of Wang discloses a method, further comprising:

partitioning the captured image of the document into a plurality of segments (Page 128, Abstract, “page segmentation method called block selection which not only segments the page image ...”, Wang);

partitioning the generated images into segments corresponding to the segments of the captured image of the document (Page 129, “the blocks with certain logic relationship are liked as parent-child nodes”, Wang); and

comparing the word layout of the captured image of the document with the word layout of the generated images only within corresponding segments of the captured image of the document and the images within the data store(s) (Col. 5, lines 59 – 65, Zhao).

Regarding Claim 29, the combination of Zhao in view of Bresler and further in view of Wang discloses a method, further comprising:

partitioning the captured image of the document to create a hierarchy of segments (Page 128, Abstract, “the formed blocks are described by a hierarchical tree to reflect the page arrangement ...”, Wang);

partitioning the generated images to create a hierarchy of segments corresponding to the hierarchy of segments related to the captured image of the document (Page 129, "the blocks with certain logic relationship are liked as parent-child nodes", Wang);

assigning the segments in the captured image of the documents and the segments in the generated images a first value when the segments comprise a word (Page 129, Section 2.1, "... a size threshold is figured to classify the connected components into text ...", Wang);

assigning the segments in the captured image of the documents and the segments in the generated images a second value when the segments do not comprise a word (Page 129, Section 2.1, "... a size threshold is figured to classify the connected components into text and nontext", Wang);

comparing the hierarchy of segments (Col. 5, lines 59 – 65, Zhao); and

removing one or more generated images from consideration when a segment associated with the one or more generated images assigned the second value and a corresponding segment associated with the captured image of the document is assigned the first value (Page 129, Section 2.1, "are filtered out as nontext components...", Wang).

Regarding Claim 37, the combination of Zhao in view of Bresler and further in view of Wang discloses a system, further comprising:

means for partitioning the generated image into a plurality of segments (Page 128, Abstract, "the formed blocks are described by a hierarchical tree to reflect the page arrangement ...", Wang);

means for partitioning the captured image into a plurality of segments (Page 129, 1. Introduction, "the blocks with certain logic relationship are liked as parent-child nodes", Wang) where each segment corresponds to respective segments associated with the generated image (Page 131, 2.6 Formation of text blocks, "the closeness between text units is based on the statistical analysis of horizontal and vertical gaps between neighboring text units of the same tree level ..."; and Page 12, [0239], lines 1 – 5, "images the Blank Space Pattern associated with the first word on the page...", Bresler); and

means for comparing a segment of the stored image with a corresponding segment of the captured image (Col. 5, lines 59 – 65, Zhao).

11. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhao (US Patent No. 6,487,301 B1, issued: November 26, 2004), in view of Bresler et al. (Bresler hereinafter) (US Patent App. Pub. No. 2003/0152293 A1, filed: January 24, 2003), in view of Shin-Ywan Wang et al. (Wang hereinafter) (Non-Patent Literature: "Block Selection: A Method for Segmenting Page Image of Various Editing Styles", Canon Information Systems, 1995 IEEE), and further in view of Ming Ye et al. (Ye

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hereinafter) (Non-Patent Literature: "Document Image Matching and Annotation Lifting", 2001 IEEE).

Regarding Claim 28, the combination of Zhao in view of Bresler and further in view of Wang discloses all the limitations as disclosed above including: generated images based at least in part upon a correspondence between the word layout of the captured image and the word layout of the generated images (Col. 9, lines 56 – 62, Zhao). However, the combination of Zhao in view of Bresler and further in view of Wang is silent with respect to assigning confidence scores. On the other hand, Ye discloses confidence scores (Page 2, Section 2., Matching Score, "the matching score ...", Ye). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Ye's teachings to the system of the combination of Zhao in view of Bresler and further in view of Wang. Skilled artisan would have been motivated to do so, as suggested by Ye (Page 2, Section 2., Matching Score, Ye), to minimize the interference of possible annotations. In addition, the applied references (Zhao, Bresler, Wang, and Ye) teach features that are directed to analogous art and they are directed to the same field of endeavor, such as, databases management systems, and image generation of documents. This close relation between the applied references highly suggests an expectation of success.

12. Claims 14 – 18, 30 – 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhao (US Patent No. 6,487,301 B1, issued: November 26, 2004), in

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view of Bresler et al. (Bresler hereinafter) (US Patent App. Pub. No. 2003/0152293 A1, filed: January 24, 2003), and further in view of Bloomberg (US Patent No. 5,181,255, issued: January 19, 1993).

Regarding Claim 14, the combination of Zhao in view of Bresler discloses all the limitations as disclosed above including captured images of the physical documents. However, the combination of Zhao in view of Bresler is silent with respect to reducing noise. On the other hand, Bloomberg discloses: a component that reduces noise in the captured image of the physical document (Col. 6, lines 55 – 57, Bloomberg). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Bloomberg's teachings to the system of the combination of Zhao in view of Bresler. Skilled artisan would have been motivated to do so, as suggested by Bloomberg (Col. 6, lines 45 – 55, Bloomberg), to provide reduced scale operations since reduced scale operations operate in an efficient manner and more readily segregate handwritten and machine printed text. In addition, the applied references (Zhao, Bresler, and Bloomberg) teach features that are directed to analogous art and they are directed to the same field of endeavor, such as, databases management systems, and images of printed documents. This close relation between the applied references highly suggests an expectation of success.

Regarding Claim 15, the combination of Zhao in view of Bresler and further in view of Bloomberg discloses a system, further comprising a component that generates

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a grayscale image of the captured image of the physical document (Col. 4, lines 33 – 36, Zhao; and Col. 4, lines 42 – 44, Bloomberg).

Regarding Claim 16, the combination of Zhao in view of Bresler and further in view of Bloomberg discloses a system, further comprising a connecting component that connects characters within a word of the generated images and the captured image without connecting words of the generated images and the captured image (Col. 4, lines 25 – 28, Bloomberg¹⁷).

Regarding Claim 17, the combination of Zhao in view of Bresler and further in view of Bloomberg discloses a system, the generated images and the captured image being binary images, the connecting component performs a pixel dilation of the binary images (Col. 5, lines 1 – 7, Bloomberg).

Regarding Claim 18, the combination of Zhao in view of Bresler and further in view of Bloomberg discloses a system, the connecting component alters resolution of the captured image of the physical document to facilitate connecting characters within a word of the captured image of the physical document without connecting disparate words within the captured image of the physical document (Col. 4, lines 33 – 36, Zhao;

¹⁷ Wherein the letters corresponds to the characters within a word as claimed.

and Col. 4 and 9, lines 25 – 28 and 41 – 44; respectively, Bloomberg¹⁸).

Regarding Claim 30, the combination of Zhao in view of Bresler and further in view of Bloomberg discloses a method, further comprising reducing noise in the captured image of the document prior to searching the data store(s) (Col. 6, lines 55 – 57, Bloomberg).

Regarding Claim 31, the combination of Zhao in view of Bresler and further in view of Bloomberg discloses a method, wherein reducing noise comprises one or more of:

providing a filter that removes markings that have a width greater than a threshold width (Col. 8, lines 16 – 20, “horizontal SE (e.g. 15h)...”, Bloomberg);

providing a filter that removes markings with a width less than a threshold width (Col. 8, lines 16 – 20, “horizontal SE (e.g. 10h)...”, Bloomberg);

providing a filter that removes markings with a height greater than a threshold height (Col. 8, lines 23 – 28, Bloomberg); and

providing a filter that removes marking with a height less than a threshold height (Col. 8, lines 23 – 28, “removes any small vertical “filaments” ...”, Bloomberg).

Regarding Claim 32, the combination of Zhao in view of Bresler and further in view of Bloomberg discloses a method, further comprising generating a grayscale

¹⁸ Wherein the letters corresponds to the characters within a word as claimed.

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image of the captured image of the document prior to searching the data store(s) (Col.

4, lines 42 – 44, Bloomberg).

Response to Arguments

1. Applicant argues that the prior art fails to disclose the amended limitation of; “locating a match to a physical document by searching generated images based on the width of words in the document and the width of words in the generated images”.

Examiner respectfully disagrees. The applied art does disclose the amended limitation of locating a match to a physical document by searching generated images based on the width of words in the document and the width of words in the generated images (See – rejection of claim 1 discussed in the Office Action above).

2. Applicant argues that the prior art fails to disclose; “generating a signature, which corresponds to a portion of a captured image, based on the word layout within the captured”.

Examiner respectfully disagrees. The applied art does disclose generating a signature, which corresponds to a portion of a captured image, based on the layout within the captured image (Col. 5 and 11, lines 51 – 62 and 44– 51; “the sender can make the digital signature by encrypting the digest with the sender’s private key...”; and further; “... use a scanner to detect the digital signature (i.e. card number or other ID) from the card, and compare the signature with the authentication stored inside the card ...”; respectively, Zhao). The applied art further discloses details in regards to word layout (Col. 11, lines 43 – 46, wherein the card number or the other identification

information that appears on the face of the card corresponds to the word layout as claimed, Zhao).

3. Applicant argues that the prior art fails to disclose; "retrieving an electronic document based on comparing the width of respective words within a captured image to the width of respective words within a generated image", and fails to disclose; "retrieving an electronic document based on comparing the location of respective words within a captured image to the location of respective words within a generated image".

Examiner respectfully disagrees. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the specific features upon which applicant relies (i.e., "based on comparing the width of respective words within a captured image to the width of respective words"; and "based on comparing the location of respective words within a captured image to the location of respective words within a generated image") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

However, the applied art does disclose the claimed limitation: retrieving the electronic document (Col. 4, lines 30 – 33, Zhao), the means based at least in part upon comparing location of respective words and width of respective words within the captured image to the location of respective words and width of respective words within the generated image (Col. 4, lines 28 – 31 and 47 – 52, wherein the order of the

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characters corresponds to the location claimed and wherein the overlap representation implies the width of the words as claimed, Zhao; and Page 9, [0167], [0168], and [0171], lines 5 – 7, 5 – 10, and 1 – 9; respectively; “because of the variable spaces and widths of printed characters, the pattern representing each page generates a unique array..”; and “Because of the irregular spacing between different characters and the different lengths and positions of words...”; wherein the step of matching imaged and processed patterns against a library of publication’s pre-stored patterns corresponds to the step of comparing location of respective words and width of respective words as claimed; Bresler).

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Prior Art Made Of Record

1. Zhao (US Patent No. 6,487,301 B1, issued: November 26, 2004)
2. Shin-Ywan Wang et al. (Non-Patent Literature: "Block Selection: A Method for Segmenting Page Image of Various Editing Styles", Canon Information Systems, 1995 IEEE).
3. Bloomberg (US Patent No. 5,181,255, issued: January 19, 1993).
4. Bresler et al. (US Patent App. Pub. No. 2003/0152293 A1, filed: January 24, 2003)
5. Ming Ye et al. (Non-Patent Literature: "Document Image Matching and Annotation Lifting", 2001 IEEE).


Points Of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Giovanna Colan whose telephone number is (571) 272-2752. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Giovanna Colan
Examiner
Art Unit 2162
March 8, 2007


Sana AL-Hashemi